

STATUS OF DALL'S SHEEP IN THE NORTHWEST TERRITORIES, CANADA

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ABSTRACT

Dall's sheep (*Ovis dalli*) are found throughout the mountain ranges of the western border of the Northwest Territories (NWT). Comprehensive surveys have not been carried out over their entire range but our estimate for the NWT is 7,000 sheep. Most harvesting is done through outfitters by non-resident hunters. The annual kill seldom exceeds 200 animals. Present management is fairly passive when compared to other species. However, public concern for management of this species is beginning to increase as non-renewable resource developments begin to encroach on the Dall's sheep habitat and provide better road access into the heart of the range.

Populations of Dall's sheep in the Northwest Territories (NWT) are found in mountainous terrain in the Richardson and Mackenzie Mountains west of the MacKenzie River (Figure 1). Dall's sheep in the NWT are of the *dalli* subspecies. All are pure white in colour, although on very rare occasions grey sheep are observed in the extreme southwest corner of the Territories (Scotter 1980).

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Most studies on Dall's sheep in the NWT have involved surveys in localized areas, such as those undertaken by Simmons et al. (1984) in the MacKenzie Mountains, or surveys periodically carried out in the Richardson Mountains (e.g. Simmons 1973, Hoefs 1978, Latour 1983). A comprehensive survey of the MacKenzie Mountains has never been carried out. For those surveys completed, total counts were attempted from either fixing wing aircraft or helicopters.

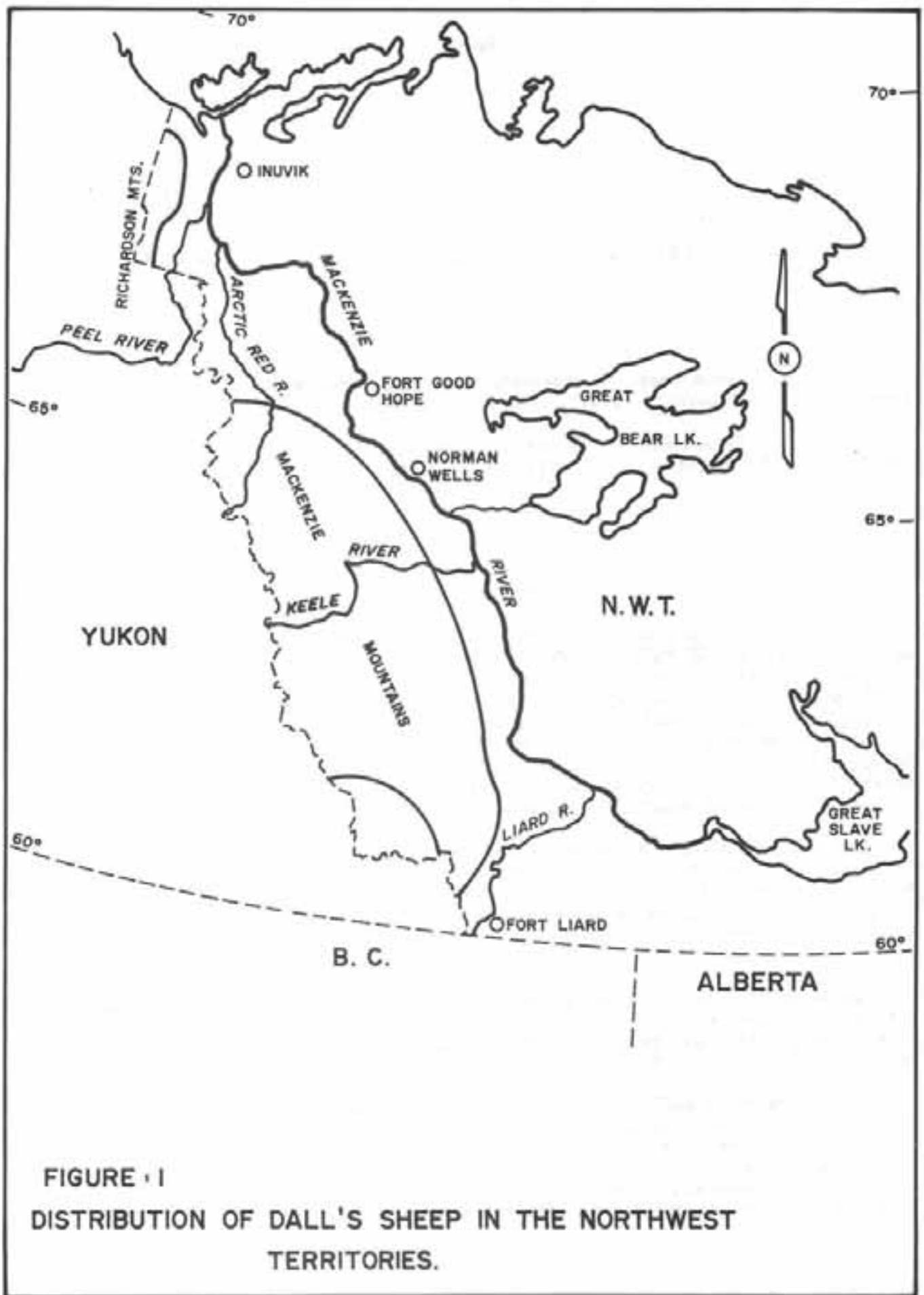


FIGURE 1
 DISTRIBUTION OF DALL'S SHEEP IN THE NORTHWEST
 TERRITORIES.

Harvest data has been collected from non-resident hunters since the late 1960's. Non-residents are Canadians or aliens (non-Canadians) who have not resided in the Territories for at least two years. A resident is a Canadian citizen or landed immigrant who has resided in the NWT for two years or more. Non-resident hunters, restricted to hunting within eight outfitting areas in the MacKenzie Mountains, are required to employ an outfitter and be accompanied by licensed guides while hunting.

Since the early 1970's the lower jaw of sheep shot by non-residents has been collected, and the teeth subsequently aged by counting annuli through sections of the teeth. Although prone to some degree of error, this process will give a reasonably accurate estimate of the average age of sheep harvested.

Harvest data from resident hunters is collected through a harvest questionnaire which covers all large game species, and is mailed out at the end of each hunting season.

RESULTS AND DISCUSSION

POPULATION STATUS

Accurate estimates of the number of sheep in the Mackenzie Mountains are not available. Simmons et al (1984) reported population densities on winter range of 1 sheep/km² from three study sites. However, extrapolation from this figure to the entire mountain range is prone to large habitat-related errors. Stelfox (in Nichols 1978) estimates 3,000-8,000 sheep to inhabit the Mackenzies. While potentially accurate, the derivation and validity of this estimate is in question.

Another approach to estimating the number of sheep in the Mackenzies is to use the annual harvest in combination with life tables developed from other long-term sheep studies. Although unknown differences in the survival rates of the populations being compared will affect the results, the method may give a rough idea of population size. We believe that an annual harvest of approximately 150 rams of a mean age of 7-8 years is sustainable (see Current Management). Utilizing age structure data from Kluane National Park (Hoefs and Cowan 1979), and the age-structure of our harvested rams in a simple computer model, we estimated a population size of 6,000 sheep in the Mackenzie Mountains would sustain the harvest of 150 rams per year. We then added the unharvested Nahanni National Park population of about 500 sheep (estimated from partial surveys by Park staff, B. Kozachenko pers. comm., Park Warden, Nahanni National Park, Fort Simpson) to arrive at a minimum estimate of 6,500 sheep in the Mackenzie Mountains.

The sheep populations in the Richardson Mountains represent the northern limit of sheep distribution in the N.W.T. Although there were suggestions of a decline during the early 1980's, two surveys in June and July of 1984 both found in excess of 500 sheep (R. Graf, pers. data, K. Jingfors, pers. comm. Regional Biologist, N.W.T. Renewable Resources, Inuvik), slightly more than had been found in the 1970's (Hoefs 1978). We have concluded that the reported decline was the result of the survey techniques used, and not an actual decline, and that the population has probably remained fairly stable. Thus we arrive at an estimated total of 7,000 Dall's sheep for the N.W.T.

HUNTING PRESSURE

Sport hunters, mostly non-residents, take the majority of Dall's sheep harvested in the N.W.T. The total reported non-resident hunter kill of Dall's sheep increased gradually between 1965 and 1974 then more sharply between 1974 and 1980 (Figure 2). This increase was a result of the initial development of the Mackenzie Mountain outfitting business. Figures on resident harvest are less precise, being based on estimates derived from questionnaire returns. In recent years roughly 20-30 sheep appear to be taken annually by residents.

The total number of sheep harvested is generally regulated by the number of hunters that the eight non-resident outfitters in the Mackenzie Mountains can accommodate each year, not by prescribed quota. Between 200 and 300 non-residents hunt in the Mackenzie Mountains annually. Dall's sheep and woodland (mountain) caribou (Rangifer tarandus caribou) are the major draw items. The lower than average harvest of sheep over the past two seasons was due to lower numbers of hunters; apparently the general world recession has affected the sheep hunting fraternity with fewer people willing or able to afford the \$5,000-\$8,000 price tag for hunts in the Mackenzie Mountains.

By virtue of the federal NWT Act natives are able to hunt Dall's sheep of any sex and age, at any time and in unrestricted numbers. The native harvest rate is unknown, but believed to be quite low. Residents of Aklavik and the Mackenzie Delta have, in the past, hunted sheep in the Richardson Mountains, but the harvest has dropped substantially in recent years with seven to ten sheep being taken each year (Latour 1983).

PRESENT REGULATIONS

Resident sport hunters are permitted to hunt Dall's sheep in the entire Mackenzie Mountain range west of the Mackenzie and Liard Rivers, an area encompassing roughly 140,000 km². Non-residents are excluded from hunting some of the front ranges along the Mackenzie Valley. As mentioned, sport hunting is not allowed in Nahanni National Park, located in the southern portion of the range.

The sport hunting season presently runs from 15 July to 31 October, although due to adverse weather conditions in late fall, most outfitters and hunters are finished by early October. Residents and non-residents are only allowed to hunt rams that have 3/4 curl horns or better. The majority of rams harvested in the mountains have had full curl horns or better.

Residents are required to purchase a \$5.00 license/tag prior to hunting. Non-residents and non-resident aliens are required to purchase a license/tag totalling \$10.00 and \$25.00, respectively. All non-residents are required to pay a \$100.00 trophy fee, if successful. Effective 1 July, 1983 all Dall's sheep horns must be marked with a numbered plug, whether the animal was hunted or the horns picked up. This regulation also applies to horns obtained prior to 1 July, 1983.

CURRENT MANAGEMENT

The major management technique used to monitor sheep populations in the NWT is the collection of harvest data. As mentioned, resident kill information

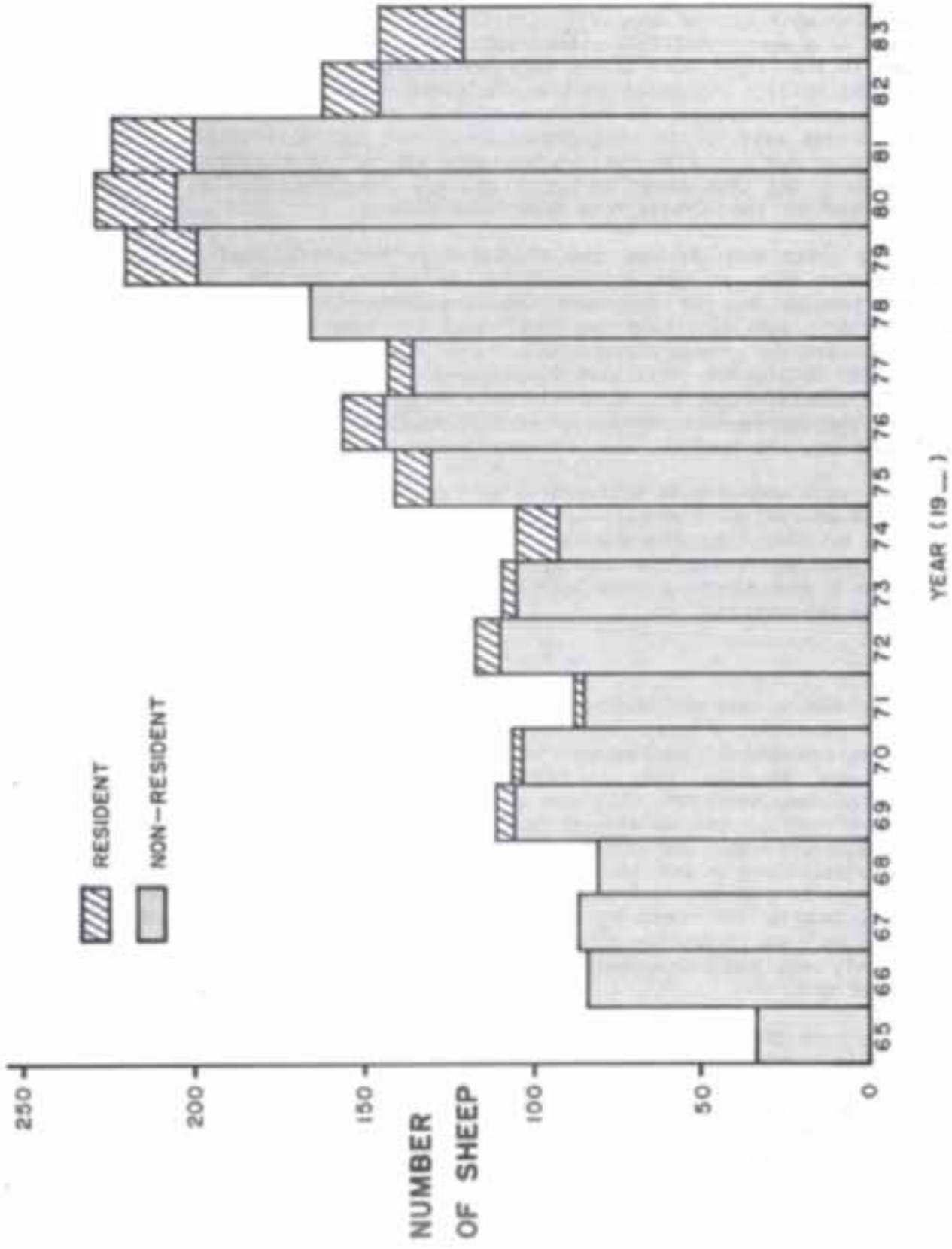


FIGURE 2. DALL'S SHEEP HARVESTED BY SPORT HUNTERS, 1965 - 1983.

is obtained from annual hunter questionnaires. Non-residents are also required to submit the lower mandible from their rams for age determination.

One possible indicator of excessive hunting pressure on a sheep population is a drastic drop in the age and/or horn size (curl) of harvested rams. A population with most of the legal (>3/4 curl) rams being harvested should show a decreasing mean age of harvested sheep and a lower proportion of full curl or better rams in the kill. Such trends have not become apparent in the Mackenzie Mountains (Figure 3), leading us to the conclusion that the current population is not being overharvested. It can be expected, however, that as the number of residents increases in the communities along the Mackenzie Valley, hunting pressure on the sheep in the front ranges adjacent to these communities will also increase. The Department is aware of this potential problem and will continue to monitor the harvest from these regions.

Loss of sheep habitat and disturbance from industrial exploration and development have not yet had an appreciable effect in the NWT. Some mining operations located in the mountains are presently in the exploration or production stage, but their combined impact on sheep populations is believed to be low. However, the proposed upgrading of the Canol Road from Norman Wells to MacMillan Pass on the NWT-Yukon Border will greatly facilitate access into the heart of the mountain system. This will provide new opportunities for mineral exploration and development, encourage recreational activities such as hunting and back-packing, and increase the opportunity for native harvesting.

Winter roads are already encroaching on the southern Mackenzie Mountains. In the winter of 1983/84 a winter road was pushed into an exploratory well site at the base of Tlogotsho Plateau, an area of prime winter range. Another winter road was built into the mountains west of Fort Simpson. While winter roads will not directly result in an increased sport harvest, they do allow easier access for natives.

THE FUTURE

As has become evident during the 1984 Wild Sheep/Goat Conference at Whitehorse, there is a disparity between the priority assigned to sheep management in the NWT as compared to the Yukon and other regions. The two main reasons for the relatively low priority rating given to sheep in the NWT are firstly, when compared with species such as barren-ground caribou (R. t. groenlandicus), moose (Alces alces), and muskoxen (Ovibos moschatus), sheep provide a very small portion of the total meat supply for the majority of the human population in the territories. Secondly, because seven of the eight outfitters live in southern provinces, direct economic returns for residents of the NWT from Dall's sheep hunting are considerably less when weighed against species such as polar bear (Ursus maritimus) and barren-ground caribou. Thus the political, and hence management, efforts are directed towards the higher priority species.

This is not to say that Dall's sheep in the NWT will be ignored or no effort made to manage the species. However, in the near future most management will be mainly of a passive nature; monitoring harvest numbers and the age and size of trophy rams, ensuring that the disturbance of sheep in critical habitats is minimized, and mitigating industrial impacts on local sheep populations. The Land Use Planning process, if it proceeds, is the one item

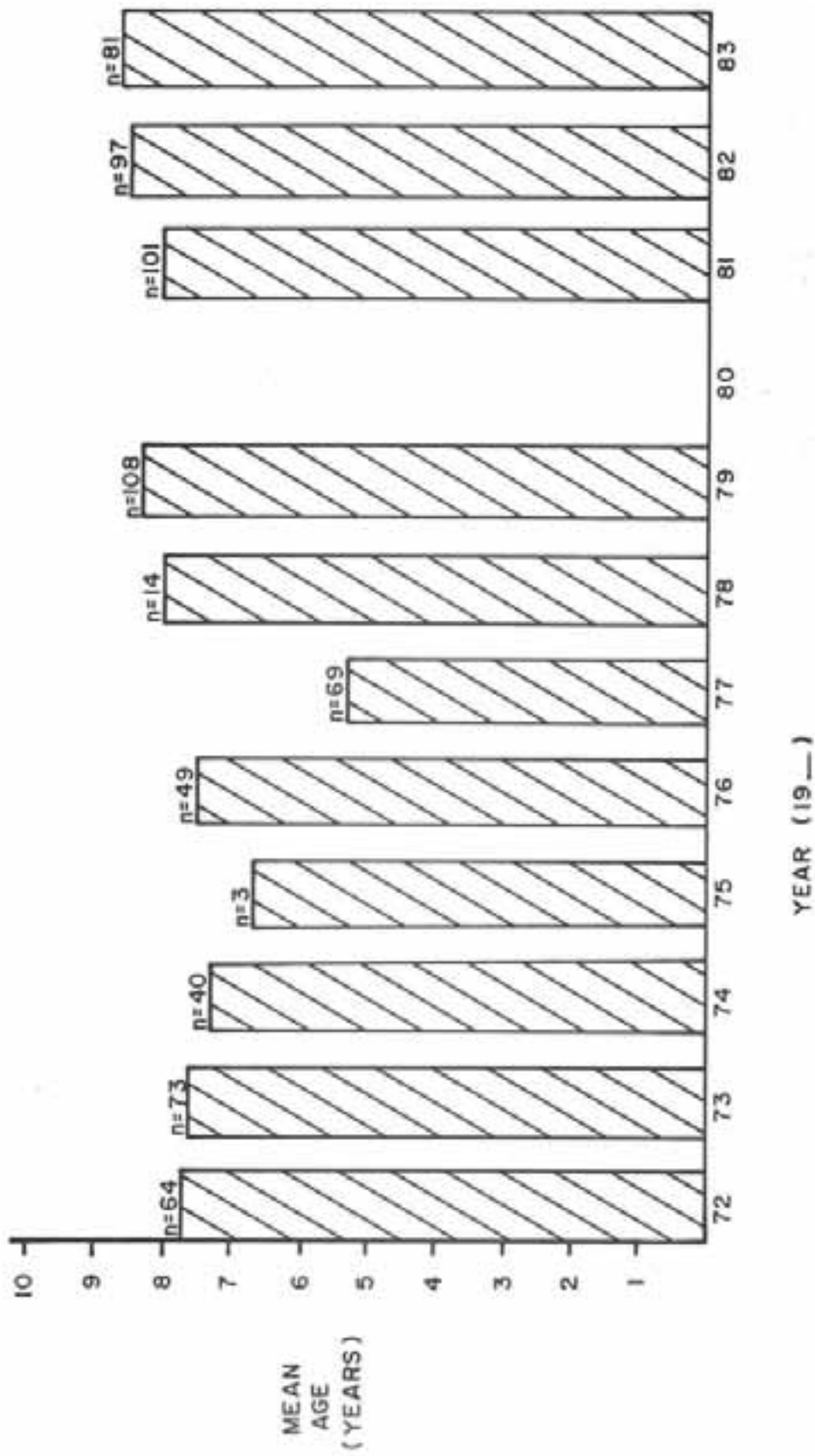


FIGURE 3
MEAN AGES OF DALL'S SHEEP HARVESTED BY
NON-RESIDENT HUNTERS, 1972 - 1983.

which could increase the amount of attention which sheep will receive in the NWT in the near future.

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